

CD-ROM Based Physical Exercise and Anti-G Training Guide for Finnish Air Force Aircrew

Author: Major Kauko Palvalin, Finland

Introduction

In 1997 the Commander-in-Chief of the Finnish Air Force (FAF) set up a group of specialists to renew the physical training and education of combat aircraft pilots and to develop training programs and materials. The group was named the Finnish Air Force Physical Education Team (FAFPET). It comprised the chief of the training branch of the FAF Headquarters (FAFHQ) as the chairman, the chief flight surgeon of the FAF, the flight surgeon of the FAF Academy, the chief of flight safety of the FAFHQ, the physical training officer of the FAFHQ as the secretary, a fighter pilot, and a physical educator from the University of Jyväskylä.

Work was initiated in the early 1980 with the evaluation of fighter pilots' physical activities. In the mid-1980s, a comprehensive series of centrifuge test was conducted to determine the physiological responses of physically different pilots to G-exposure. After several years of domestic research it was possible, in the late 1980s, to write the first specific Finnish language strength training guide for the modern pilot. At the same time, a gym was equipped at every squadron, and pilots were allowed to devote two hours per week for physical exercises in compliance with the new training program.

In 1993, a comprehensive questionnaire was administered to assess pilots' living habits and physical activities, and their opinions of the available physical training materials. It showed that materials were uninteresting and pilots' personal training habits inefficient, sometimes even incorrect.

Method

In late 1993, the FAFPET formed a new group of specialists which had as its main task the production of completely new physical training materials for fighter pilots. The new materials were scheduled for publication in 1996 to coincide with the introduction of the F-18 as the front-line FAF interceptor. It was known that F-18 training materials would be computer based, so it was decided to use the same approach for the new physical training materials.

The FAFPET, however, decided that it would first be better to publish a concise, user-friendly book, a compact information package of the fighter pilot's workload, military aviation physiology, and physical training. At the same time the FAFPET furthered the idea of creating a CD-ROM version of the book, since it was realized that some topics would be difficult to understand by solely reading the book, while they could be clarified significantly in multimedia based learning materials. In the summer 1996, after two and a half years' evaluation and teamwork, Physical Exercise Guide for Air Force Aircrew was born.

Results

The new guide was distributed for daily use in flying units. Each pilot got his copy, and the guide was also introduced as course material for cadet training in the FAF Academy. The guide consists of five sections:

1. On the utmost limits: the description of a combat mission.

2. Workload of the pilot: Acceleration forces and their physiological effects, G-tolerance, mental workload of the pilot.
3. Performance needs of the pilot: endurance, strength, skills, conditioning of the muscles.
4. Improving the pilots' performance: endurance, strength, and skills training; preparation for, and recovery from, exertion.
5. Appendices (exercise program and training examples), source notes, bibliography.

The guide has been translated into Swedish, and into English for international distribution.

The CD-ROM presents the topics using hypertext and multimedia, thus helping to link actual cockpit situations with physical training. It is available in Finnish, Swedish, and English, and deals with:

1. G-tolerance: blood pressure, changes in the field of view, G-LOC, G-stress, push-pull effect, G-protection.
2. Skeletal phenomena: neck rotation under G-stress, neck and back pain, disc prolaps.
3. Performance: strength, endurance, and energy production in different G-environments; skills; warm-up and stretching.
4. Training: testing, skills, warm-up and stretching, strength endurance, G-tolerance, skeletal phenomena, preflight warm-up, postflight stretching.
5. Simulations: G-stress, skeletal problems, and circulation.
6. Introduction and publications of the FAFPET.
7. Appendices: detailed information, bibliography.

Conclusion

The FAF now has a state-of-the-art, multilingual training tool that is easy to take wherever lecture or training material is needed.